AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A thermal infrared detector comprising:

a substrate;

a temperature sensor having electrical characteristics that change in response to a temperature change caused by absorption of infrared rays;

heat-insulating supporting legs supporting and thermally insulating said temperature sensor and including signal lines for reading out electrical signals from said temperature sensor; and

an infrared absorption layer in thermal contact with said temperature sensor, wherein

said temperature sensor and said infrared absorption layer overlap said heat-insulating supporting legs when viewed along a direction of infrared rays incident on said infrared absorption layer, and

each of said temperature sensor, said heat-insulating supporting legs, and said infrared absorption layer is located in a respective, different plane, and the planes are spatially separated from each other so that respective first and second cavities are located between said temperature sensor and said heat-insulating supporting legs and between said heat-insulating supporting legs and said infrared absorption layer.

Claim 2 (Cancelled).

3. (Currently Amended) The thermal infrared detector according to claim 1, wherein said temperature sensor and said infrared absorption layer cover substantially all of said heat-insulating supporting legs when ~~seen~~ viewed along ~~incident~~ the direction of infrared rays incident on said infrared absorption layer.

4. (Currently Amended) The thermal infrared detector according to claim 1, wherein said infrared absorption layer, said heat-insulating supporting legs, and said temperature sensor are laminated sequentially when viewed along ~~incident~~ the direction of infrared rays incident on said infrared absorption layer.

5. (Previously Presented) The thermal infrared detector according to claim 1, wherein said temperature sensor comprises a diode or a plurality of diodes that are serially connected.

6. (Previously Presented) The thermal infrared detector according to claim 1, wherein said temperature sensor comprises a transistor.

7. (Previously Presented) The thermal infrared detector according to claim 1, wherein said substrate includes a mono-crystalline silicon layer on an insulating thin film and said temperature sensor is in said mono-crystalline layer.

8. (Previously Presented) The thermal infrared detector according to claim 1, wherein said substrate opposite said temperature sensor is thinner than elsewhere.

9. (Previously Presented) The thermal infrared detector according to claim 1, wherein said temperature sensor comprises a bolometer film.

10. (Currently Amended) A method for manufacturing a thermal infrared detector comprising:

forming a temperature sensor on a substrate, said temperature sensor having electrical characteristics changing in accordance with a change in temperature ;

forming a first sacrificial layer covering said temperature sensor and partially contacting said substrate;

removing a portion of said first sacrificial layer to expose a portion of said temperature sensor;

forming a wiring layer on said first sacrificial layer , said wiring layer being electrically connected to said temperature sensor at a portion not covered by said first sacrificial layer;

forming a second sacrificial layer covering said wiring layer and contacting part of said first sacrificial layer;

forming via holes by removing a part of said first and second sacrificial layers;

forming an infrared absorbing layer on said second sacrificial layer so that said infrared absorbing layer contacts said temperature sensor through said via holes either directly or with an insulating layer interposed; and

removing said second ~~sacrifice~~ sacrificial layer, said first ~~sacrifice~~ sacrificial layer, and a portion of said substrate opposite said temperature sensor to form a first cavity between said substrate and said temperature sensor, a second cavity between said temperature sensor and said wiring layer, and a third cavity between said wiring layer and said infrared absorbing layer.

11. (Currently Amended) A method for manufacturing a thermal infrared detector comprising:

forming a first sacrificial layer on a substrate;

forming a temperature sensor on said first sacrificial layer, said temperature sensor having electrical characteristics that change in accordance with changes in temperature ~~on a substrate~~;

forming a second sacrificial layer covering said temperature sensor and partially contacting said first sacrificial layer;

removing a portion of said second sacrificial layer to expose a portion of said temperature sensor;

forming a wiring layer on said second sacrificial layer, said wiring layer being electrically connected to said temperature sensor at a portion not covered by said second sacrificial layer;

forming a third sacrificial layer covering said wiring layer and contacting part of said second ~~sacrifice~~ sacrificial layer;

forming via holes by removing a part of said third and second sacrificial layers;

forming an infrared absorbing layer on said third sacrificial layer and contacting said temperature sensor through said via holes either directly or with an insulating layer interposed; and

removing said third sacrificial layer, said second sacrificial layer, and said first sacrificial layer to form a first cavity between said substrate and said temperature sensor, a second cavity between said temperature sensor and said wiring layer, and a third cavity between said wiring layer and said infrared absorbing layer.

12. (Previously Presented) An infrared focal plane array comprising a plurality of thermal infrared detectors according to claim 1, wherein said infrared detectors are arranged in a two-dimensional array.

13. (Currently Amended) An infrared focal plane array comprising a plurality of thermal ~~type~~ infrared detectors according to claim 5, wherein said infrared detectors are arranged in a two-dimensional array, a forward bias voltage is applied so a constant current flows, and an ~~the~~ end-to-end voltage generated by incident infrared rays in each of said infrared detectors is read out as an image signal.

14. (Previously Presented) The infrared focal plane array according to claim 13, further comprising a reference temperature sensor and differential input circuits to which signals from both of said infrared detectors and said reference temperature sensor are applied, wherein said reference temperature sensor has a temperature-voltage characteristic substantially the same as those of said infrared detectors and is substantially insensitive to incident infrared rays.